

**RETAIL**  
*WR Display & Packaging*  
**SUPPLIES**  
WWW.RETAILSUPPLIES.NET

*Oxo* Biodegradable



**Winnipeg:**

30 Plymouth Street  
Winnipeg, MB R2X 2V7  
Toll Free: 1-800-665-8447  
Toll Free Fax: 1-800-668-4743  
Local: 1-204-925-7900

**Calgary:**

Unit 129, 2312 52nd Ave SE  
Calgary, AB T2C 0A3  
Toll Free: 1-800-561-1204  
Local: 1-403-234-8186

**WWW.RETAILSUPPLIES.COM**

# Oxo Biodegradable B A G S



**Plain bags with oxo-biodegradable logo ■ Ideal for post-printing**

**SIZES AVAILABLE : 9x11.5+2 • 12x16+3 • 16x18+4 • 20x23+5**



# OxoBiodegradable<sup>TM</sup> Plastics

PRODUCTS INCORPORATING **TDPA<sup>®</sup>**, **TOTALLY DEGRADABLE PLASTIC ADDITIVES**  
 ARE DESIGNED WITH A CONTROLLED LIFETIME AND WHEN DISCARDED  
 WILL DEGRADE.

## Why *OxoBiodegradable* plastics?

### LANDFILL DISPOSAL

- Reduces landfill volume
- Reduces greenhouse gas effects
- Minimizes organic waste entombment
- Environmentally responsible
- Easy implementation /adoption
- Cost / performance / Infrastructure

### LITTER CONTROL

- Reduces plastic pollution
- Limits government intervention
- Non-toxic residues
- Reduced corporate branded litter
- Environmentally friendly
- Carbon retention in soil

### TECHNOLOGICAL MERITS

- Scientifically substantiated
- FDA compliant applications
- Controlled product life
- Cost effective over alternatives
- Recyclable
- Proven performance
- Compatibility—no re-tooling or productivity loss

## How does *OxoBiodegradability* work?

**1. TDPA<sup>®</sup>** additives are blended into the commodity PE, PP, PS resins during production to impart to the plastic special degradation properties without impacting productivity or product integrity.

**2.** After use, when the product is disposed of in landfills, compost sites, arable land, or inadvertently as litter, these products undergo oxidative degradation much more rapidly than ordinary plastics.

**3.** Mechanisms that trigger this process

are heat input, sunlight (UV light) and mechanical stress.

**4.** For PE products in the presence of moisture, microorganisms, oxygen, and soil these products will ultimately biodegrade (per ASTM D6954-04).

**TDPA®** does not hinder the performance of otherwise **recyclable** plastics including:

1. Commodity polyethylene (PE) plastics



HDPE



PP



LDPE



PS

2. Commodity polypropylene (PP) plastics

3. Commodity polystyrene (PS) plastics

PE plastic products include plastic bags of all forms i.e. trash, refuse, kitchen, produce, carrier bags. As well as thin wall containers for food.

PP plastic products include many refrigerated containers, clear produce bags, most bottle tops, some food wrap.

PS plastic products include many throwaway utensils, food packing and protective packing.

## Why use EPI's Totally Degradable Plastic Additives (TDPA®)?

*Proven technology*

*Quality Assurance Program*

*QA Audits of licensed production facilities*

*Pioneers of OxoBiodegradable Technology*

*OxoBiodegradable Institute founding member*

*Pre-production testing of degradation*

*FDA / SCF food safe compliant*

*MSDS product safety statements with every shipment*

*Customer due diligence*

*International Scientific Advisory Board (ISAB)*

*Full laboratory and testing facility*

*Member of ASTM D6954 -04 committee*

### ENVIRONMENTAL CLAIMS STATEMENTS (ECS) AS USED BY LICENSEES

Application	Statement	Qualifying Statement	<i>*Resellers &amp; manufacturers need to be aware of California State Bill 1749</i>
PE Films	OxoBiodegradable	_____	
	OxoBiodegradable*	*According to ASTM D6954-04.	
	OxoBiodegradable*	*ASTM D6954-04	
PE Films	Totally Degradable*	*This environmentally responsible bag is based upon Oxo-Biodegradable technology and will first degrade, then biodegrade in the presence of moisture, microorganisms, oxygen, and soil.	
All	Degradable*	*Products incorporating TDPA* provide full performance similar to non-degradable plastics during their useful life.	

*ECS claims must comply with applicable laws within markets degradable products are sold.*

## Frequently Asked Questions:

1. WHAT IS THE DIFFERENCE BETWEEN DEGRADABLE AND BIODEGRADABLE PLASTICS?

Degradable plastics are designed to undergo significant changes in chemical structure under specific environmental conditions, resulting in a loss of product integrity. Molecules are oxidized and break down into smaller molecules, and then the plastic disintegrates. Biodegradation occurs as a result of the action of naturally occurring microorganisms such as bacteria, fungi and algae as they consume the smaller plastic fragments.

2. WHAT IS OXOBIODEGRADATION OF A PLASTIC?

OxoBiodegradation is a two-stage process in which, first the plastic is converted by reaction with oxygen in the air to molecular fragments that are water wettable and second, these smaller oxidized molecules are biodegraded (converted into CO<sub>2</sub>, H<sub>2</sub>O, and biomass).

3. WHAT PRODUCTS CAN BE MADE DEGRADABLE?

EPI's primary focus is on short-term, single use products.

4. CAN TDPA\*-BASED DEGRADABLE PLASTICS BE RECYCLED? Yes. Recycling in-plant material is entirely possible. Recycling post-consumer degradables is possible if they are based on TDPA\* technology, and provided degradation has not started.

5. WHAT IS THE DIFFERENCE BETWEEN EPI TDPA\* TECHNOLOGY AND STARCH-BASED TECHNOLOGY?

In specific PLA (Poly Lactic Acid) starch-based technology, the plastic is derived from plant starch. Though this sounds reasonable it has implications including:

- Use of fossil fuels to produce the product.
- Rapid release of CO<sub>2</sub> limiting humus production.
- High costs compared to commodity PE, PP and PS blended with TDPA\*.

6. WHAT IS THE SIGNIFICANCE OF ASTM D6954-04 AS APPLIED TO OXOBIODEGRADABLE PLASTICS?

ASTM D6954-04 formally recognizes the technology internationally. For single use throwaway plastic products it offers a controlled lifetime to items that are not being recycled yet, when discarded, will degrade.

**RETAIL**  
*Wrt Display & Packaging*  
**SUPPLIES**  
 WWW.RETAILSUPPLIES.NET

**opi**  
 OxoBiodegradable  
 Plastics Institute

**e pi**  
 ENVIRONMENTAL PRODUCTS INC.

*OxoBiodegradable*

# Totally Degradable Plastic Shopping/Grocery/Carrier Bags

## Your Customers are Demanding Them!

**Totally Degradable Plastic Shopping/Grocery/Carrier Bags** produced from commodity PE resins and incorporating EPI's Totally Degradable Plastic Additives (TDPA™) are available **now!**

0 Days



After 30 Days



After 55 Days



*Illustration of photo and thermal degradation of a shopping bag incorporating EPI's TDPA™ Additive (top row) vs. a bag without EPI's TDPA™ Additive (bottom row). Test procedures follow ASTM D5272 "Outdoor Exposure Testing of Photo Degradable Plastics" Guidelines.*

Independent scientific tests conducted by Exxon Chemical Co., Fina Oil & Chemical Co., and Packaging Industries Research Association (PIRA) International confirm that EPI's Totally Degradable Plastic Additives (TDPA™) when incorporated into PE film products, cause the plastic to degrade and decompose. Testing by PIRA International has approved degradable film products incorporating EPI's TDPA™ Technology for use in both non-food contact and direct food contact applications in the UK (under the terms of the UK Statutory Instrument 1523[1987]), EC (under EC Directive 90/128/EEC and EC Directive 97/48/EC), and the USA (for use in LDPE under the terms of USA FDA Code of Federal Regulations CFR21 177.1520 [polyolefins]).



**EPI Environmental Plastics Inc.**

**Totally Degradable Plastic Additives (TDPA™) Technology  
Technology in tune with Nature™**

# Environmentally Friendly Plastic Shopping/Grocery/Carrier Bags



**IMAGINE** the benefits of totally degradable plastic shopping/grocery/carrier bags that:

- when disposed of in landfill sites or when unfortunately littered in the open, degrade into the end products of CO<sub>2</sub> and water (disappear) as opposed to remaining around for decades or more
- help reduce the build up of dangerous methane gases in landfill sites
- save valuable landfill space
- keep you ahead of both environmental legislation and public opinion

In today's "disposable" oriented society, thousands of tons of garbage are disposed of in landfill sites daily. A vast amount of today's plastic waste ends its life-cycle in a modern sanitary landfill where it stays for decades to come, leaving our children with an ever increasing mountain of plastic waste. Even worse, plastic disposed of as litter represents an eyesore and may cause sanitation and health problems in some environments.

Today's plastic is designed to last for many decades or longer. The life cycle of many plastic products, including shopping/grocery/carrier bags, only require the products to have relatively short life spans. These products are not effectively recycled. Incorporating EPI's Totally Degradable Plastic Additives (TDPA™) into the regular production of plastic shopping/grocery/carrier bags will cause the bags to completely degrade when subjected to sunlight, heat and/or mechanical stress over a pre-determined period of time.

## EPI's Totally Degradable Plastic Additives (TDPA™) differ substantially from existing starch based technologies

EPI's TDPA™:

- are incorporated with **commodity polyolefin (PO) resins** and processed on **standard plastic processing machines** to produce plastic end products with **controlled life cycles**
- produce uniform, quality end products which are 50% - 200% more economical than existing starch based technologies
- can produce degradable plastic films in numerous colors and transparencies

Degradable plastic products produced using EPI's TDPA™ Technology:

- retain the characteristics of regular plastics (strong, tough, flexible) during use, but will become brittle, disintegrate and ultimately be digested by micro-organisms back to the basic elements of CO<sub>2</sub> and water with no harmful residues at the end of the life cycle
- start to degrade when subjected to sunlight, heat, and/or mechanical stress. A combination of, or any one of these environmental factors is enough to trigger the chemical oxidation process described above
- will degrade in landfills, when buried in soil, when disposed of as litter, or in compost environments depending on the formulations used and the requirements of the end product

The information presented in this literature is based on the best data available and is believed to be correct. However, nothing stated herein is to be taken as warranty, expressed or implied regarding the accuracy of the information or the use of our product. Nor shall anything contained herein be construed as permission or recommendation to practice any invention covered by a patent or patent application, or know how owned by EPI Environmental Technologies Inc. (EPI), or any of its subsidiaries, or by others without a License from the owner or sublicense from EPI of the patent, patent application or know how.